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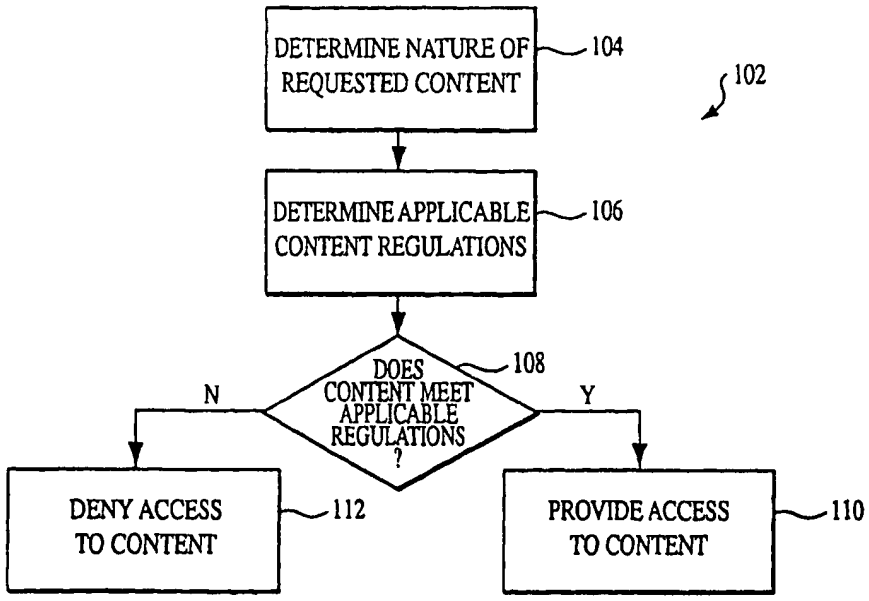

(57) Abstract

Controlling access to requested content includes accessing information describing requested content, accessing information describing at least one regulation that is related to the requested content and to geographical information, and determining whether the content information satisfies the regulation(s).

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CONTROLLING ACCESS TO CONTENT

TECHNICAL FIELD

This invention relates to controlling access to content.

BACKGROUND

The Internet and other computer networks can provide users with a wealth of information on almost any topic. Some of this information, however, includes material that may be offensive and/or unsuitable for children. Organizations such as the Recreational Software Advisory Council (RSAC) have proposed rating schemes that provide users with information about the nature of content offered by different network sites. The RSAC rating scheme defines categories for describing the violence, nudity, sex, and offensive language included in content. Different vendors such as MICROSOFT have integrated the RSAC scheme into their software to enable users to control the content displayed. For example, a parent may configure a browser to deny access to any content having a RSAC nudity rating above "revealing attire." These parental controls enable parents to prevent their children from viewing mature subject matter.

SUMMARY

In one general aspect, controlling access to requested content includes accessing information describing requested content, accessing information describing at least one regulation that is related to the requested content and to geographical information, and determining whether the content information satisfies the regulation(s).

Embodiments may include one or more of the following features. For example, access to the requested content may be denied if the content information is determined not to satisfy the applicable regulation(s), and may be permitted if the content information is determined to satisfy the applicable regulation(s).

The information describing the content may be content ratings. For example, the content ratings may include data corresponding to one or more of violence, nudity, sex, and language. The content ratings may be substantially in accordance with the Recreational Software Advisory Council (RSAC) ratings scheme.

Accessing information describing the content may include accessing a database that includes information for different content. Accessing information may also include accessing content information in a response to the content request.

One or more regulations related to the requested content may be determined. This may include inferring the citizenship of a user that requested the content, for example, by accessing the user's billing address and/or determining an access number used by the user.

The regulation may be a national regulation, an international regulation, and/or a local regulation such as a law, an ordinance, a rule, a treaty, a proclamation, or an edict. The regulation may be a regulation that applies to citizens within a jurisdiction, to citizens outside a jurisdiction, and/or to non-citizens within a jurisdiction.

The content can include text, graphics, animations, sound, video, and instructions. The content may be, for example, HTML (HyperText Markup Language) instructions, XML (Extensible Markup Language) instructions, or MPEG (Moving Pictures Experts Group) data.

Determining whether the information describing the requested content satisfies the regulation(s) may include determining that the content information satisfies all of the regulations.

When a request for the content is received, for example, at a proxy, an indication that access has been denied may be provided if the content does not satisfy the applicable regulation(s).

In another general aspect, access to requested content available on the Internet is controlled by receiving a request for content, accessing content ratings describing the requested content, accessing information describing at least one applicable regulation that is related to geographical information concerning the requestor, determining whether the content information satisfies the regulation(s), denying access to the requested content if the content information is determined not to satisfy the regulation(s), and permitting access to the requested content if the content information is determined to satisfy the regulation(s).

The invention may be implemented as a computer program, disposed on a computer-readable medium, for controlling access to requested content.

Advantages may include one or more of the following. By controlling access to content based on one or more applicable regulations, a system can protect both an end-user

and a common carrier from liability for viewing or transmitting prohibited content. Even in countries where common carriers are exempted from liability, use of the system to self-regulate the content offered by the carrier can make the carrier more appealing to governments, for example, when seeking permission to operate in a jurisdiction. By using an established content ratings scheme, the system can be incorporated easily into software that already provides parental controls to thereby take advantage of the ratings already determined for a large body of content. By centralizing regulation-based controls in a proxy or other intermediate agent, the proxy can prevent users from disabling the controls, further protecting both the users and the common carrier.

Other features and advantages of the invention will be apparent from the description and drawings, and from the claims.

DESCRIPTION OF DRAWINGS

FIG. 1 is a screenshot of a list of URLs (Universal Resource Locators) provided by a search engine.

FIG. 2 is a screenshot of a display indicating that access to requested content has been denied based on applicable regulations.

FIG. 3 is a flowchart of a process for controlling access to requested content based on one or more regulations.

FIG. 4 is a table of categories and category levels for describing content.

FIG. 5 is a diagram of data describing content.

FIG. 6 is a flowchart of a process for determining regulations that apply to a content request.

FIG. 7 is a table of regulations.

FIG. 8 is a diagram of a proxy that processes client requests for content.

FIG. 9 is a diagram of a client that denies access to requested content based on one or more regulations.

Like reference numbers and designations in the various drawings indicate like elements.

DETAILED DESCRIPTION

Many different countries regulate the content of material that is provided for viewing or that is transmitted. For example, Japan prohibits transmission of material that includes full frontal nudity. Similarly, Germany prohibits its citizens from accessing material that includes pro-Nazi sentiments. Saudi Arabia prohibits material including nudity within its borders, and also prohibits its citizens from viewing such material when traveling to other countries. Regulation of materials is not limited to national jurisdictions. For example, in the United States, different county and state representatives have argued for local regulation of access to obscene material.

FIGS. 1 and 2 illustrate a system that denies a user access to content that does not comply with applicable regulations. Such content can include text, graphics, animations, video, sound, and instructions. The content can be embodied in a wide variety of formats such as HTML (HyperText Markup Language), XML (Extensible Markup Language), or MPEG (Moving Pictures Experts Group).

As shown in FIG. 1, a search engine has produced a list of URLs (Universal Resource Locators) that include information corresponding to a search engine query of "asexual reproduction." URL 100 corresponds to a resource that provides content related to nude beaches. As shown, in FIG. 2, when a Saudi Arabian citizen attempts to retrieve the nude beach URL 100 content from the network site, the system denies access based on Saudi Arabian regulations that prohibit Saudi Arabian citizens from viewing content that includes nudity. The system provides a display explaining that regulations (e.g., laws, treaties, rules, ordinances, proclamations, or edicts) caused the system to deny access.

The system protects from liability both the citizen attempting to access the content and the carrier transmitting the content. Additionally, even in countries where carriers do not have a duty to monitor content, the use of the system by a carrier to self-regulate the content that the carrier provides can increase the carrier's appeal to a government, for example, when the carrier seeks permission to provide services within a country.

FIG. 3 illustrates a process 102 for controlling access to content based on regulations. Process 102 includes determining the nature (e.g., the degree of violence or nudity) of the requested content (step 104), determining regulations (e.g., state, county,

national, or international regulations) that apply to the request (step 106), comparing the nature of the requested content with the restrictions imposed by the applicable regulations (step 108), providing access to the content if the content meets the applicable regulations (step 110), and denying access to the content 112, in whole or in part, if the content fails to meet these regulations (step 112). For example, the process 102 may determine the nature of the requested content as described with respect to FIGS. 4 and 5, may impute or obtain the nationality of the requesting user, and may use the nationality to access encoded representations of that nation's regulations, as described with respect to FIGS. 6 and 7.

Specifically, referring to FIG. 4, step 104 may include inferring the nature of the requested content from search terms, from metatags associated with search results, from lists or services maintained to categorize requests, or otherwise. For example, the Recreational Software Advisory Council (RSAC) rating scheme 120 includes categories 122-128 (e.g., violence, nudity, sex, and language) and category levels 130-138 (e.g., zero to four). The scheme can be used to describe content by assigning the content a level 130-138 for each category 122-128. Referring to FIG. 5, a network site and its ratings are shown at 140. The network site, shown as "www.sex.com", is rated in accordance with the RSAC scheme including level data for each RSAC category. The rating shown indicates that the network site 142 does not portray any violence 144 (i.e., level "0" 138 of the violence category 122), but does include "provocative displays" 146 (i.e., level "4" 130 of the nudity category 124), "explicit sexual acts" 148 (e.g., level "4" 130 of the sex category 126), and "vulgar language" 150 (e.g., level "4" 130 of the language category 128). One or more additional categories may be available for other forms of rating.

The content need not be described in accordance with the RSAC ratings scheme or any other existing ratings scheme. The ratings scheme used may depend on the common carrier's preference. The use of an established scheme, however, enables the system to use a large existing body of content ratings. Using the RSAC scheme also permits easy modification of software that implements parental controls to also implement regulation-based controls. Preferably, software that enables a user to disable parental controls does not permit the user to disable regulation-based controls.

Content rating can be performed in many different ways. For example, an organization may have a human operator retrieve information from different network

resources and rate the retrieved information. Alternatively, a program may examine content and automatically determine ratings based on the inclusion of information (e.g., words) associated with different categories. Content ratings can be collected and stored in databases. Such databases can be centralized or distributed across different computers. Alternatively, content ratings can be stored at network sites providing the rated content. These sites can transmit the ratings along with the requested content and let the client or an intervening agent process the ratings.

Referring to FIG. 6, determining applicable regulations (step 106) can include determining the citizenship of a user, for example, by examining a user's billing address or by accessing data such as a user's self-reported citizenship (step 114). Determining applicable regulations 106 can also or alternatively include determining the current location of a user, for example, by determining the access number dialed by a user to connect to a service provider (step 116). Based on this information, the system can determine the applicable regulation(s) by, for example, consulting a look-up table (step 118).

Referring to FIG. 7, an exemplary look-up table 129 that is used, e.g., in step 118 of FIG. 6, stores encoded representations of regulations of different national, international, and local entities. As shown, the table includes regulations encoded in accordance with the RSAC ratings scheme. The table expresses a regulation as the maximum level, or threshold, of permissible content in each of the RSAC categories 160-168. If a content's category rating exceeds a regulation's category threshold, the content does not meet the regulation. For example, a regulation specifying that content having more than "moderate expletives" (level 2 of the RSAC language category) effectively prohibits access to content including "strong language or hate speech" (level 3 of the RSAC language category). The regulation would also prohibit access to "crude or vulgar language" (level 4 of the RSAC language category).

The table 129 can include multiple rows for each jurisdiction to encode different types of regulations (e.g., 170-178). For example, the table 129 can store regulations that independently govern citizens requesting content within a jurisdiction (e.g., 170) and citizens requesting the content outside the jurisdiction (e.g., 172). Further, other regulations can independently regulate access by non-citizens requesting content within the

jurisdiction (e.g., 174) and non-citizens requesting content outside the jurisdiction (not shown).

By comparing the ratings for requested content with one or more applicable regulations, the system can determine whether to deny or grant access to the content. For example, if a U.S. citizen requested content from "www.sex.com" (FIG. 5) from a computer in the U.S., the system would deny access because the level of sex in the requested content (i.e., level "4" in FIG. 5) exceeds the maximum level of sex 138 (i.e., level "3" in FIG. 7) permitted in the United States. In this example, if the U.S. citizen made the same request while in another country, the U.S. regulations 146 for citizens abroad would not result in denied access because the level of sex permitted in the other country is "4", the same as the level of sex in the requested content.

Regulations of more than one jurisdiction or entity may apply to a request for content. The system can process the different regulations to ensure the content satisfies all applicable regulations. For example, two regulations 176, 178 may apply to a German citizen traveling to Japan. The system ensures that requested content satisfies both regulations 176, 178. If the traveler requested the content of FIG. 6, the system would deny access either on the basis that such access would violate Japan's regulations because the content includes nudity more excessive than "partial nudity" (e.g., level "2" of the nudity category 162) or on the basis that such access would violate Germany's regulations because the content may include hate speech (e.g., content more excessive than level "2" of the language category 166).

Referring to FIG. 8, the techniques described above can be incorporated into a proxy 184 or other intermediate agent that processes content requests. For example, the techniques can be offered by an Internet Service Provider.

As shown in FIG. 8, a proxy 184 processes content requests received from a client 180 via a modem 182 or other communication device by forwarding content requests to content sources 186 (e.g., Internet Web-servers) and returning the responses of the content source 186. As shown, the different elements can reside in different jurisdictions 188, 190. By including regulation instructions 192 in the processing performed by the proxy 184, the proxy 184 can ensure that information that is returned in response to a content request complies with applicable regulations. By centralizing regulation-based controls in a proxy

184 or other intermediate agent, the user may be denied the ability to disable the controls, further protecting both the user and the common carrier.

As shown, the regulation instructions 192 can access regulation data 194 (e.g., the table of FIG. 7), user data such as billing information 196, and content ratings 198 data or instructions. The content ratings 198 may include a table that collects ratings of content available from different content sources 186, e.g., a table including several records such as that shown by FIG. 5.

When the proxy 184 receives a content request or response, the proxy 184 can determine regulations applicable to the requesting user based, for example, on the user's citizenship or access location and the ratings corresponding to the requested content in the content ratings data 198. If the content does not comply with applicable regulations, the proxy 184 can return information (e.g., HTML instructions and data) indicating that the proxy 184 is not transmitting the requested content due to content regulations.

FIG. 8 is merely illustrative and other embodiments could implement the system differently or could add or omit elements. For example, instead of storing content ratings data 198, the proxy 184 could receive content ratings in data supplied by a content source 186 responding to a request. Additionally, the system could dynamically determine the nature of requested content using software that examines the content. Further, the system need not store user data 196, but could instead infer citizenship information based on the access location of the modem 182 or other communication device used by the client 180.

Referring to FIG. 9, the techniques described above are not limited to use in a proxy or other intermediate agent, but instead could reside in the client 180. As shown, the regulation instructions 192 access regulation data 194 and user data 196. The regulation data 194 may or may not be much more limited in scope or volume than the comprehensive list of regulations shown in FIG. 7. For example, an American client may only include regulations that apply to U.S. citizens. Additionally, user data 196 need not be stored, but can be dynamically obtained, for example, by querying an operating system registry. When the client 180 receives a response to a content request, the regulation instructions 192 can prevent presentation of information that does not comply with applicable regulations.

The methods and techniques described here may be implemented in digital electronic circuitry, or in computer hardware, firmware, software, or in combinations of

them. Apparatus embodying these techniques may include appropriate input and output devices, a computer processor, and a computer program product tangibly embodied in a machine-readable storage device for execution by a programmable processor. A process embodying these techniques may be performed by a programmable processor executing a program of instructions to perform desired functions by operating on input data and generating appropriate output. The techniques may advantageously be implemented in one or more computer programs that are executable on a programmable system including at least one programmable processor coupled to receive data and instructions from, and to transmit data and instructions to, a data storage system, at least one input device, and at least one output device. Each computer program may be implemented in a high-level procedural or object-oriented programming language, or in assembly or machine language if desired; and in any case, the language may be a compiled or interpreted language. Suitable processors include, by way of example, both general and special purpose microprocessors. Generally, a processor will receive instructions and data from a read-only memory and/or a random access memory. Storage devices suitable for tangibly embodying computer program instructions and data include all forms of non-volatile memory, including by way of example semiconductor memory devices, such as EPROM, EEPROM, and flash memory devices; magnetic disks such as internal hard disks and removable disks; magneto-optical disks; and CD-ROM disks. Any of the foregoing may be supplemented by, or incorporated in, specially-designed ASICs (application-specific integrated circuits).

A number of embodiments of the present invention have been described. Nevertheless, it will be understood that various modifications may be made without departing from the spirit and scope of the invention. For example, the distribution of the functions and components need not be as shown in the embodiments of FIGS. 8 or 9, but can instead be distributed over any number of computers or networks. Accordingly, other embodiments are within the scope of the following claims.

WHAT IS CLAIMED IS:

1. A method of controlling access to content, the method comprising:

accessing content information describing requested content;

accessing regulation information describing at least one regulation that is related to the requested content and to geographical information; and

determining whether the content information satisfies the at least one regulation.

2. The method of claim 1, further comprising denying access to the requested content if the content information is determined not to satisfy the at least one regulation.

3. The method of claim 1, further comprising permitting access to the requested content if the content information is determined to satisfy the at least one regulation.

4. The method of claim 1, wherein the content information comprises content ratings such that the accessing of the content information includes accessing content ratings.

5. The method of claim 4, wherein the content ratings comprise data corresponding to one or more of violence, nudity, sex, and language such that the accessing of the content information includes accessing data corresponding to one or more of violence, nudity, sex, and language.

6. The method of claim 1, wherein the accessing of the content information comprises accessing a database that includes information for different content.

7. The method of claim 1, further comprising receiving a content request, wherein the accessing of the content information comprises accessing information included in a response to the content request.

8. The method of claim 1, wherein the accessing of the regulation information comprises determining one or more regulations related to the requested content.

9. The method of claim 1, further comprising receiving a content request, wherein the accessing of the regulation information comprises accessing information that relates to a user from whom the content request is received.

10. The method of claim 9, wherein determining which of the one or more regulations that apply comprises determining the citizenship of a user that requested the content.

11. The method of claim 10, wherein the determining of the citizenship comprises accessing a billing address for a user from whom the content request is received.

12. The method of claim 9, wherein the determining which of the regulations apply comprises determining an access number used by a user from whom the content request is received.

13. The method of claim 1, wherein the accessing of the regulation information includes accessing one or more of a national regulation, an international regulation, and a local regulation.

14. The method of claim 1, wherein the accessing of the regulation information includes accessing one or more of a law, an ordinance, a rule, a treaty, a proclamation, and an edict.

15. The method of claim 1, wherein the accessing of the regulation information includes accessing a regulation that applies to citizens within a jurisdiction.

16. The method of claim 1, wherein the accessing of the regulation information includes accessing a regulation that applies to citizens outside a jurisdiction.

17. The method of claim 1, wherein the accessing of the regulation information includes accessing a regulation that applies to non-citizens within a jurisdiction.

18. The method of claim 1, wherein the accessing of the content information comprises accessing one or more of text, graphics, animations, sound, video, and instructions.

19. The method of claim 1, wherein the accessing of the content information comprises accessing one or more of HyperText Markup Language instructions, Extensible Markup Language instructions, and Moving Pictures Experts Group data.

20. The method of claim 1, wherein the determining of whether the information describing the requested content satisfies the at least one regulation comprises determining that the content information satisfies all of the at least one regulations.

21. The method of claim 1, further comprising receiving a request for the requested content.

22. The method of claim 21, wherein receiving the request comprises receiving the request at a proxy.

23. The method of claim 1, further comprising providing an indication that access has been denied if the content information does not satisfy the regulation.

24. A method of controlling access to requested content available on the Internet, the method comprising:

receiving a request for content;

accessing content ratings describing the requested content;

accessing information describing at least one regulation that is related to geographical information concerning the requestor;

determining whether the content information satisfies the at least one regulation;

denying access to the requested content if the content information is determined not to satisfy the at least one regulation; and

permitting access to the requested content if the content information is determined to satisfy the at least one regulation.

25. A computer program, disposed on a computer-readable medium, for controlling access to requested content, the computer program including instructions for causing a processor to:

access content information describing requested content;

access regulation information describing at least one regulation that is related to the requested content and to geographical information; and

determine whether the content information satisfies the at least one regulation.

26. The computer program of claim 25, further comprising instructions for causing the processor to deny access to the requested content if the content information is determined not to satisfy the regulation.

27. The computer program of claim 25, wherein the content information comprises content ratings.

28. The computer program of claim 25, wherein the instructions for causing the processor to determine which of the one or more regulations that apply include instructions for causing the processor to determine a citizenship of a user that requested the content.

29. The computer program of claim 25, further comprising instructions for causing a processor to receive a request for the content.

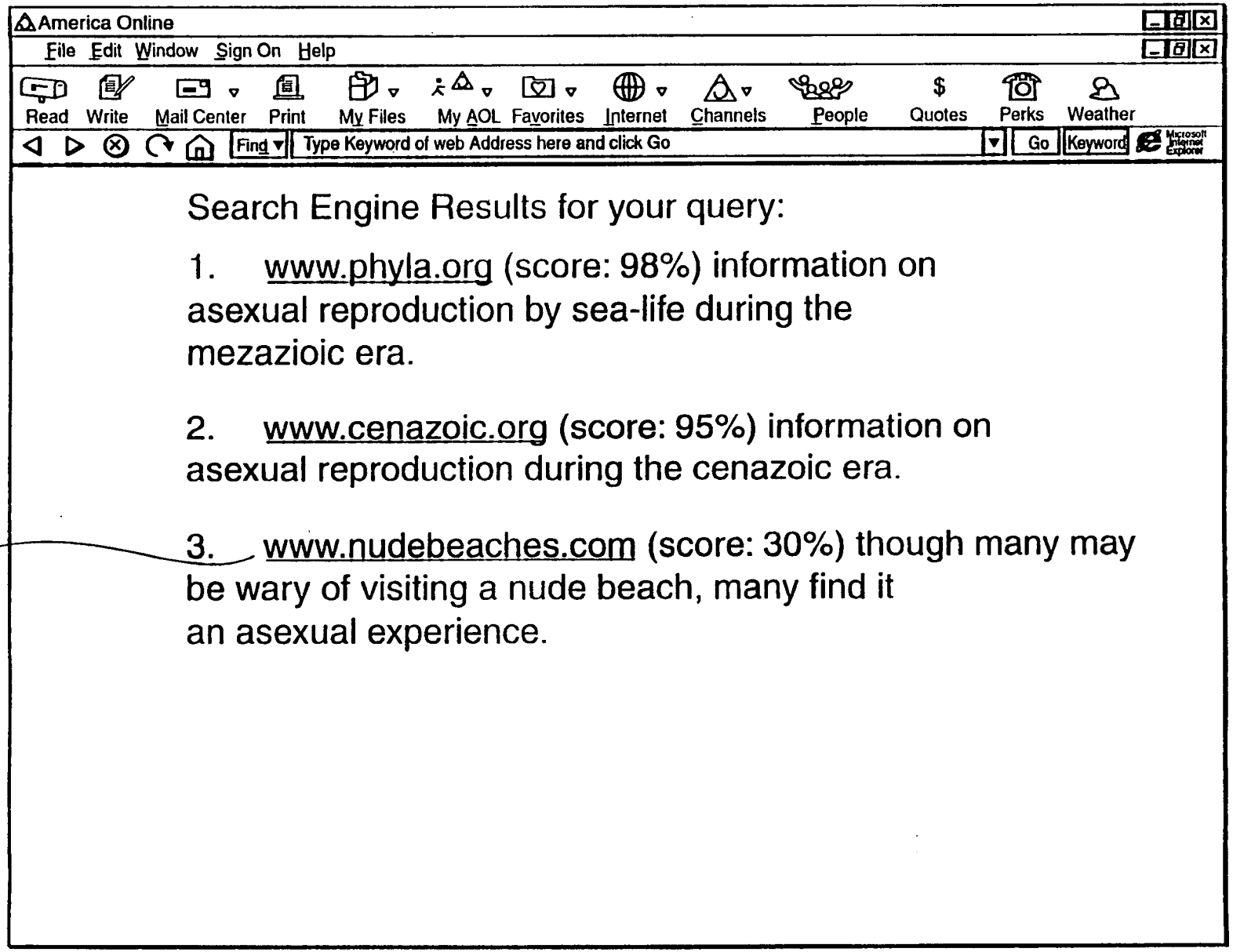
America Online
File Edit Window Sign On Help
Read Write Mail Center Print My Files My AOL Favorites Internet Channels People Quotes Perks Weather
Find
Type Keyword of web Address here and click Go
Go
Keyword
Search Engine Results for your query:
1. www.phyla.org (score: 98%) information on asexual reproduction by sea-life during the mezazioic era.
2. www.cenazoic.org (score: 95%) information on asexual reproduction during the cenazoic era.
3. www.nudebeaches.com (score: 30%) though many may be wary of visiting a nude beach, many find it an asexual experience.
100

FIG. 1

America Online
File Edit Window Sign On Help
Read Write Mail Center Print My Files My AOL Favorites Internet Channels People Quotes Perks Weather
Find Type Keyword of web Address here and click Go
Go Keyword
ACCESS DENIED
Applicable laws do not permit transmission of the requested content to a Saudi Arabian citizen.

FIG. 2

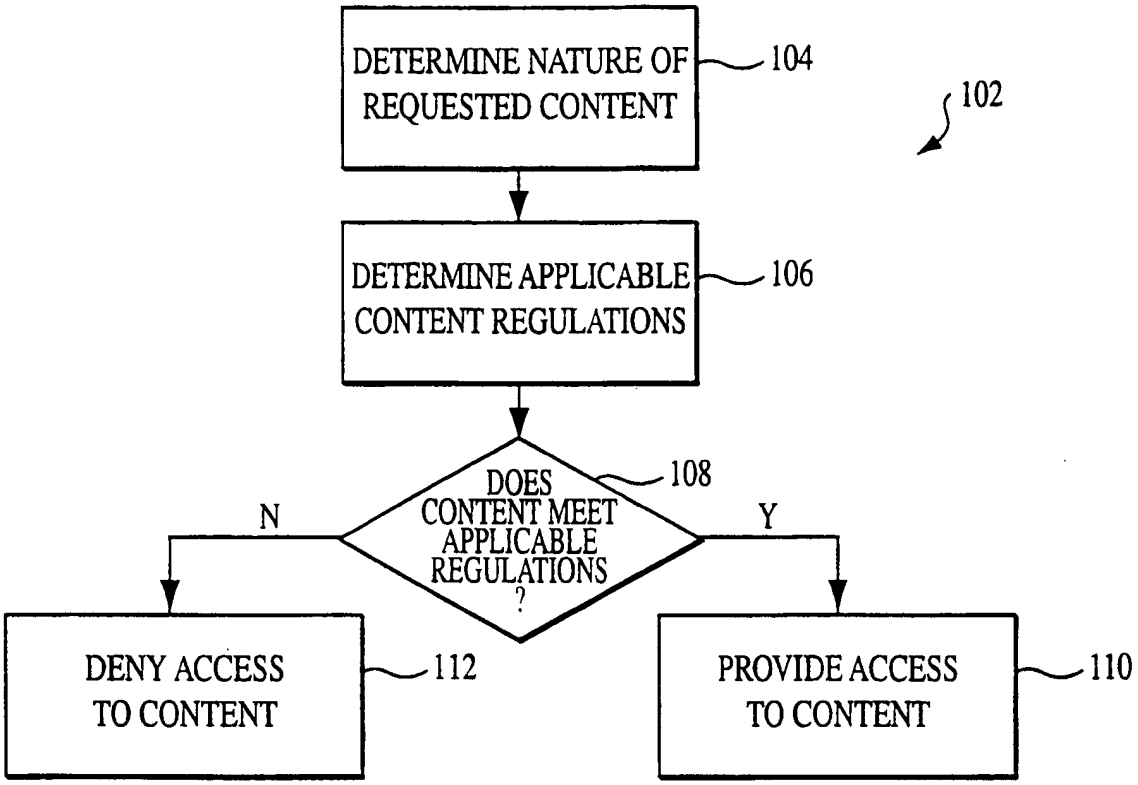

FIG. 3

120

	122 VIOLENCE RATING DESCRIPTOR	124 NUDITY RATING DESCRIPTOR	126 SEX RATING DESCRIPTOR	128 LANGUAGE RATING DESCRIPTOR
130 LEVEL 4	RAPE OR WANTON, GRATUITOUS VIOLENCE	FRONTAL NUDITY (QUALIFYING AS PROVOCATIVE DISPLAY)	EXPLICIT SEXUAL ACTS OR SEX CRIMES	CRUDE, VULGAR LANGUAGE OR EXTREME HATE SPEECH
132 LEVEL 3	AGGRESSIVE VIOLENCE OR DEATH TO HUMANS	FRONTAL NUDITY	NON-EXPLICIT SEXUAL ACTS	STRONG LANGUAGE OR HATE SPEECH
134 LEVEL 2	DESTRUCTION OF REALISTIC OBJECTS	PARTIAL NUDITY	CLOTHED SEXUAL TOUCHING	MODERATE EXPLETIVES OR PROFANITY
136 LEVEL 1	INJURY TO HUMAN BEING	REVEALING ATTIRE	PASSIONATE KISSING	MILD EXPLETIVES
138 LEVEL 0	NONE OF THE ABOVE OR SPORTS RELATED	NONE OF THE ABOVE	NONE OF THE ABOVE OR INNOCENT KISSING; ROMANCE	NONE OF THE ABOVE

FIG. 4
PRIOR ART

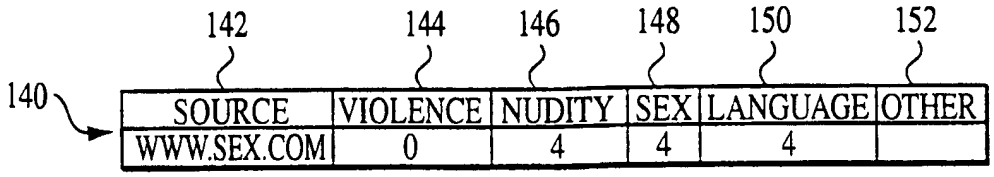

FIG. 5

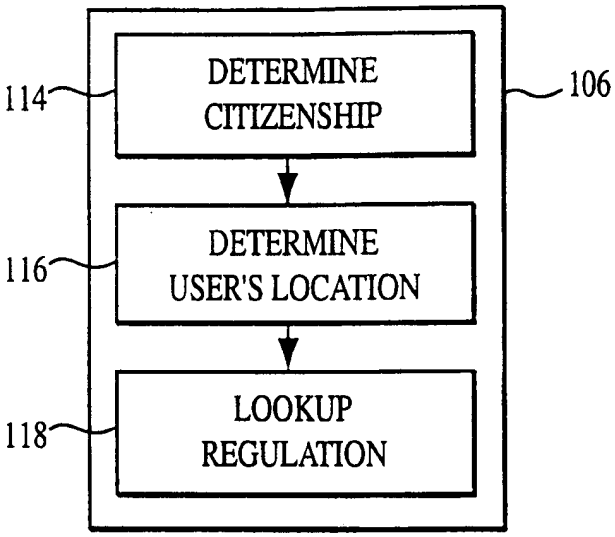

FIG. 6

129

	156 JURISDICTION ENTITY	158 REGULATION TYPE	160 VIOLENCE	162 NUDITY	164 SEX	166 LANGUAGE	168 OTHER
170	U.S.	CITIZENS IN COUNTRY	4	4	3	4	
172	U.S.	CITIZENS ABROAD	4	4	4	4	
174	U.S.	NON-CITIZENS IN COUNTRY	4	4	3	4	
176	GERMANY	CITIZENS ABROAD	3	4	4	2	
178	JAPAN	NON-CITIZENS IN COUNTRY	4	2	4	4	

FIG. 7

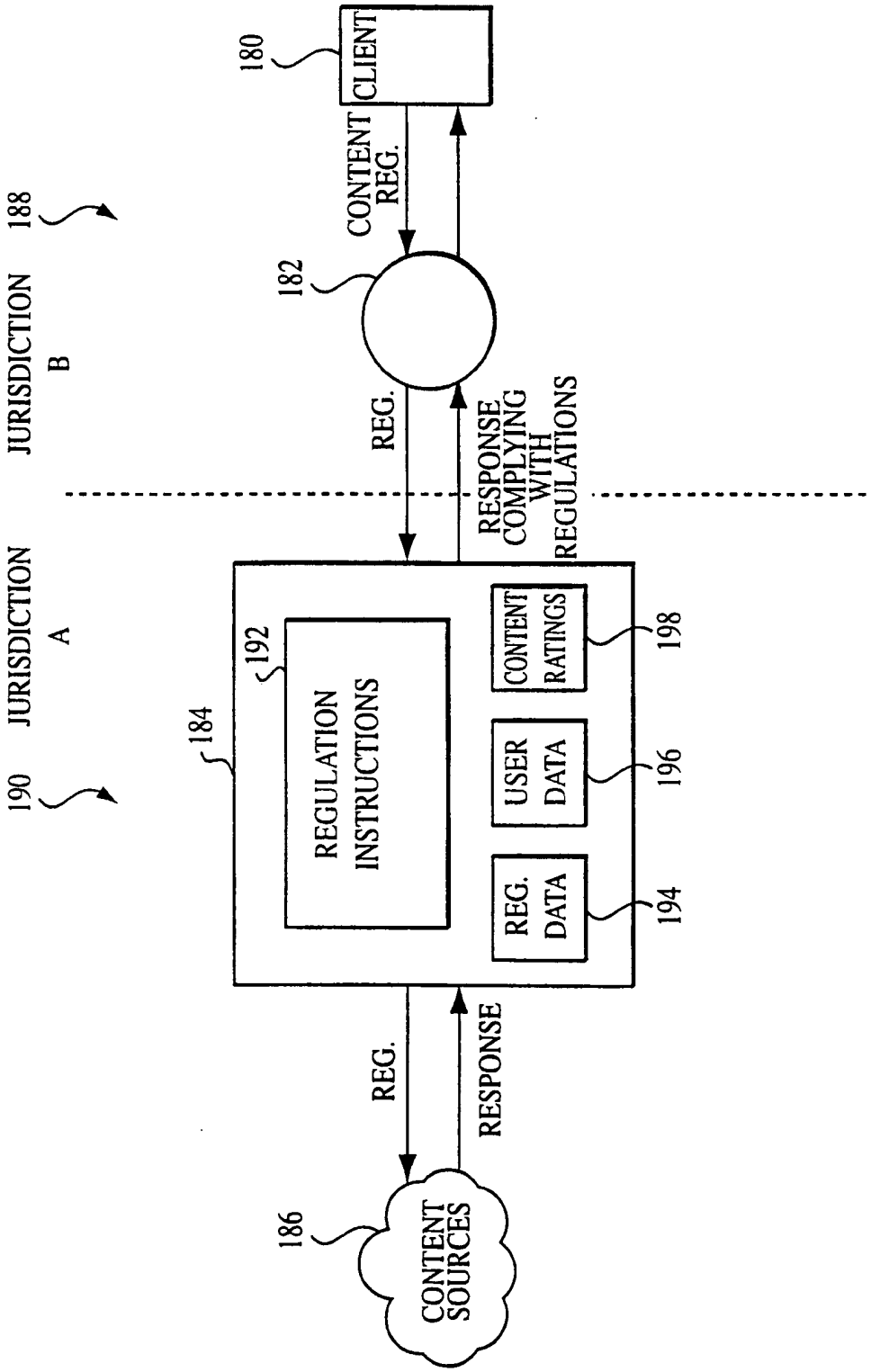
180
CLIENT
CONTENT REG.
182
188
JURISDICTION B
REG.
RESPONSE COMPLYING WITH REGULATIONS
JURISDICTION A
190
184
192
REGULATION INSTRUCTIONS
CONTENT RATINGS
198
USER DATA
196
REG. DATA
194
REG.
RESPONSE
186
CONTENT SOURCES

FIG. 8

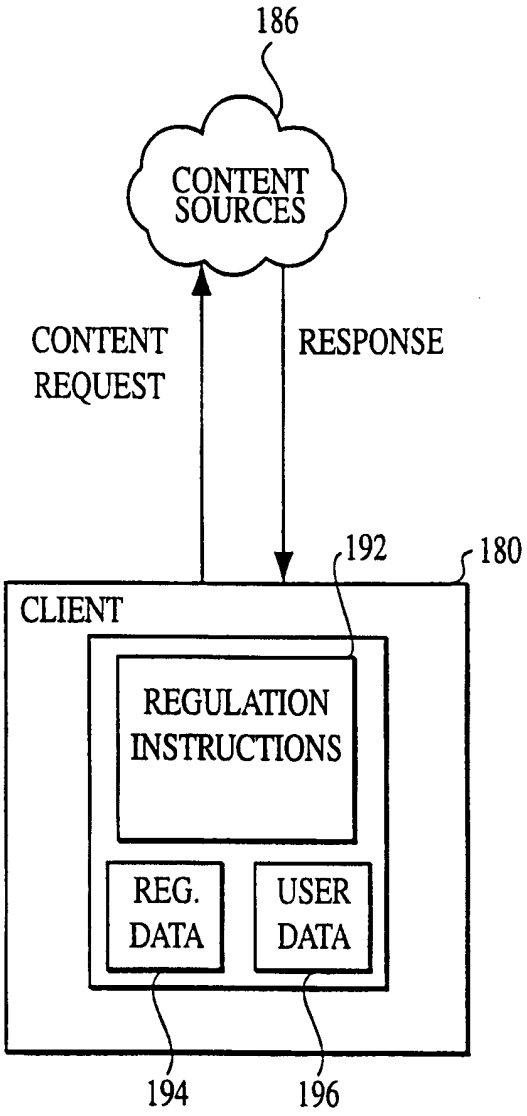
186
CONTENT SOURCES
CONTENT REQUEST
RESPONSE
192
180
CLIENT
REGULATION INSTRUCTIONS
REG. DATA
USER DATA
194
196

FIG. 9

INTERNATIONAL SEARCH REPORT

Inte ional Application No
PCT/US 00/12916

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G06F1/00 H04N7/16

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 G06F H04N H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data, PAJ, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 893 920 A (IBM) 27 January 1999 (1999-01-27)	1-6,8,9, 12,13, 15,16, 18-27,29
A	abstract page 2 -page 3, line 34 page 5, line 43 -page 18, line 27 figures 1-3	7,10,11, 14,17,28

A	US 5 706 507 A (SCHLOSS ROBERT JEFFREY) 6 January 1998 (1998-01-06) abstract column 3, line 60 -column 12, line 6	1-9,12, 18-27,29

	-/--	

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
31 August 2000	06/09/2000

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Jacobs, P

INTERNATIONAL SEARCH REPORT

Inte ional Application No
PCT/US 00/12916

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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A	WO 97 49245 A (CANADIAN V CHIP DESIGN INC) 24 December 1997 (1997-12-24) abstract page 5, line 5 -page 9, line 24 page 13, line 12 -page 14, line 23 page 18, line 5 -page 21, line 28	1-9,12, 18-27,29
A	EP 0 828 209 A (SAMSUNG ELECTRONICS CO LTD) 11 March 1998 (1998-03-11) column 5, line 9 -column 9, line 14	1-9,12, 18-27,29
A	US 5 884 033 A (KENDALL MATTHEW ET AL) 16 March 1999 (1999-03-16)	

INTERNATIONAL SEARCH REPORT

Information on patent family members

Inte .onal Application No
PCT/US 00/12916

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0893920 A	27-01-1999	NONE	
US 5706507 A	06-01-1998	NONE	
WO 9749245 A	24-12-1997	CA 2179474 A	20-12-1997
		US 5828402 A	27-10-1998
		AU 3085497 A	07-01-1998
EP 0828209 A	11-03-1998	JP 10133762 A	22-05-1998
		US 5978920 A	02-11-1999
US 5884033 A	16-03-1999	NONE	